

E17  
NALÓN

TERRA FLUXUS

Dynamics, Processes and Times: the Estuary as a Complex Adaptive System

"Verde de montes y negra de minerales"  
"Green from mountains and black from minerals"

Asturias had two colors, two colors that characterized it for Pedro Garfias. Coal transformed a territory that had been agricultural, poor, and emigrant. A landscape devastation: mine entrances from which the coveted coal flowed, staining the neighboring meadows black, wires, embankments, wagons, washing facilities; the river flowing with dirty water; the chestnut trees cut down...

The uncontrolled extraction of natural resources, driven by an excess of consumption as a species, subjected the Nalón estuary to a strong process of transformation in a short period of time. The lack of consideration for natural aesthetics during the past century, encouraged by the achievements of the Industrial Revolution, had numerous consequences for its configuration. The landscape has become the new field of action where humans have ceased to be mere observers and have become an indispensable element for the transformation of the territory, giving rise to a kind of conglomerate of artifacts and natures. What were once natural valleys with rural economic and social structures became fragmented clusters of unexpected density coexisting with the footprint they were perpetrating on the territory.

This territory is perceived as a heterogeneous mixture of contrasting identities. The coexistence of natural, rural, industrial, and urban landscapes means that each of them continues to battle for the character of the place. This has led to the emergence of heterodox building and urban planning models that carry within their genetic code the conflict upon which they are built. The shift from object to subject of the landscape, the recognition that it is something endowed with life and entropy and subject to fluctuations identical to human ones, allows for a new starting position in the understanding of landscape intervention. However, it is precisely these mediations that need to be analyzed so that the adoption of ecological themes becomes fruitful in the transmutation to architecture. The adaptation to these scenarios involves understanding the natural resilience processes, relying on the non-contemplative observation of a familiar context: the Nalón estuary.



The proposal understands that the recovery of the fragile relationship between the place's heritage memory and ecologically vulnerable generational transition involves consolidating and enhancing inherited identity and tradition, adapting them to instability and climate crisis. Based on the collective intensity of a community awareness on both sides of the Nalón, which expects the logical enhancement of its "artifacts of identity", forming an open-air museum, its involvement is sought in a model of coevolutionary processes between neighbors and their natural environment. Interpreted in a contemporary code that introduces the ecosystem into a process of re-signification, where the model capable of accommodating any productive, economic, ecosystemic, sustainable, residential, or work space is not stable but gives way to changing processes, dynamics, and times. A transition to an "eco-centric" model where the preservation and recovery of ecosystems of great natural value become the center around which the rest of the nature-based strategies are articulated. In this line of thought, the construction of a generative landscape based on cycles, processes, and flows that engender different forms of interaction with nature is proposed. The estuary emerges as an improbable and fluctuating figure capable of buffering and self-organizing

in the face of chaos while maintaining tradition, rootedness, and self-sufficiency, enabling the use of resources and excellent water management within a circular ecosystem.

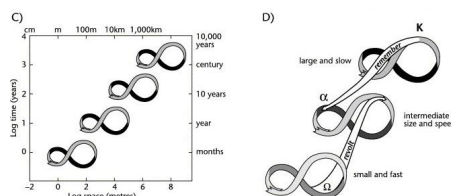
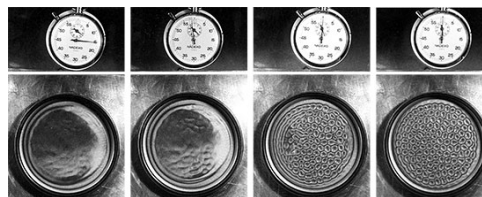
TERRA FLUXUS offers a practical application of the lessons learned from the writes of *Robert Smithson, Gilles Clément, James Corner, Bruno Latour, Miriam García, Paisaje Transversal, and Sara López Arraiza*, to reinterpret the conventional image of a culturally denigrated but strongly identified landscape from an unbiased perspective and with concern for the current climate crisis. Today, more than ever, in this times of uncertainty, it is necessary to understand that it is not enough to recover and preserve an original state, mummified under the lens of nostalgia. Neither in terms of natural landscape nor in connection with industrial heritage. Its recovery must be accompanied by the challenge of a resilient design, planning, and anticipation based on the understanding of the estuary as a complex adaptive system that adapts to changes introduced by human activity.



NOTIONS OF THERMODYNAMICS AND RESILIENCE: chaos and self-organization.

The application of Ilya Prigogine's theory of dissipative structures and Holling's panarchic approach provides an integrative perspective of open systems and their irreversible dynamics. This theory emphasizes the importance of change and adaptability in complex systems beyond natural resilience, and it can be applied to re-conceptualize the aesthetic of a devastated landscape. The estuary exemplifies the response of an ecosystem capable of adapting to changes introduced by human activity. Within our proposal, it can maintain its structure and complexity by exchanging energy and matter with its environment, allowing for a constant flow of energy and maintaining its organization. For this, understanding the rest of the subsystems as part of a larger complex is essential. The proposal does not share the prevailing opinion that considers the estuary obsolete and advocates for a state of overprotection, balance, or rest that condemns it to "thermal death." Instead, it trusts in its re-signification as a space for experimentation, research, and environmental education. A catalyst for new strategies for socio-ecological systems that coexist with the diversification of innovative activities that exchange energy and matter with the estuary under the name of the blue economy.

Through the study of the dynamics and the various adaptive cycles of the estuary, the thinking associated with excessive protection and the idea of not causing 'impacts' on the environment to adapt it to new human and non-human needs in the face of the climate emergency is demystified.



DYNAMIC LANDSCAPE: from Terra firma to Terra Fluxus.

The designation of terra firma -firm, unchanging, fixed, and defined- gives way in favor of the shifting processes coursing through and across the urban field: terra fluxus. This means designing and planning slow processes, of long duration and global scale, while being prepared for intense and rapid disturbances at the local scale. The proposal experiments with new areas of opportunity in contemporary architectural thinking and reinterprets the conventional image to conceive it as contemplative under a new ecological aesthetic. The adaptation of architecture as an artificial habitat conditioned to these scenarios involves understanding natural resilience processes.

The goal of pointing to the Nalón estuary as a dissipative structure far from equilibrium within a complex adaptive system is to show how this nature image renews the conception of nature from classical thermodynamics, giving a positive meaning to concepts that were only negatively viewed in it: irreversibility, non-equilibrium, openness, instability, non-linearity, fluctuations, in order to bridge the gap between life and matter present in classical thermodynamics.

REPRESENTED LANDSCAPE: The Importance of Geological Sections in Thermodynamic Aesthetics.

In these times of uncertainty, it is urgent and necessary to rethink the geological stratum, rediscovering the riches that the territory presents, enhancing its most significant graphic values. Studying the topographic, climatic, environmental, and cultural characteristics of our ecosystems through each of their layers contributes local specificity to our interventions. It is necessary to react to the physical and virtual environment, integrating into the medium in order to generate hybrid responses that are both local and global. Thermodynamic and geological readings of the ecosystem present numerous variations that reflect interests specific to a temporal and spatial context linked to the flows understood within these layers. It is in this context that we must address the need to recover the Humboldtian information of the "horizontal" plane of the soil as a geological stratum, transforming it into a field of action. The soil becomes an active surface, a constructed plane affected by external processes where architecture emerges as an improbable and fluctuating figure.



THE PLACE HAS CHANGE: Coevolution with what surrounds us.

The proposal focuses on four fundamental strategies and four time scales to preserve the identity of the place and anticipate self-organization in a higher structure. Evocative non-formal images reinterpreted in a contemporary code introduce a synergy of coexistence between inhabiting and renaturalizing within a territorial and urban scale through a global intervention that blurs the strict zonation of the estuary, with the intention of permanence, belonging, and coevolution.

TIME BUILDS HABITAT.

In Lewis Carroll's literary work, at the beginning of the story, Alice falls asleep and starts dreaming that she feels sleepy while falling. From here, a journey through different spaces happens, materialized thanks to the successive changes in the girl's scale, whose normal stature is being modified. Space has no size; it is not small or large, but it depends on Alice's transformation. The perception of space is similar to what happens with the concept of "time"; it is relative and depends on our references and needs. Space-time is the real or imaginary experience. Similarly, George Perec glimpsed the scalar relativity of space in relation to time. "Space seems to be more tamed or less dangerous than time: everywhere we find people wearing watches, but it is very rare to find people carrying compasses."

In terms of an ecosystem, temporal scale is a generically binding quality. It establishes constantly changing relationships. Its relativity is mirrored in the decision-making processes of ideation, adaptation, and anticipation. A short and medium-term vision is proposed during the course of long-term periods. A landscape in process is proposed, consisting of flexible, juxtaposed, and continuous stages. A generative and readable project to promote the diversification and succession over time of human and non-human species in complete coevolution.

### A\_Geological Time: An Adaptive Infrastructure of Dynamics and Processes for the Formation of a Resilient Landscape.

The natural heritage of the estuary acts as a catalyst for sustainable development, where urban and economic development and the preservation of endemic flora and fauna strike a healthy balance above and below the water level. In light of the environmental crisis, proposing new development without addressing the increasing biological challenges occurring in the soil and water layers of the Nalón is difficult. Long-term action is taken through the application of measures based on community consultation, present-future prioritization, testing, monitoring, adaptation, and consolidation to become a model for sustainable development, circularity, and new ideas in urban development, with the aim of creating new habitats for all living species.

#### PRESERVATION OF THE INHERITED ECOSYSTEM.

Inherited natural structures are preserved with the aim of protecting the estuary, conserving its biodiversity, and adapting to climate change. Existing marshes in Xunquera and Llama, the swamp alder, and the beaches of Garruncho and La Guardada are expanded by recovering the surrounding environment that constrained these ecosystems and did not allow their advancement or retreat. In this way, non-human life and biodiversity are preserved. The most important action for preservation, along with the introduction of native species, is the treatment of the edges, which allows, in a subsequent phase, their biological connection to the newly recovered ecosystems. Preservation values the inherited while anticipating its fluctuation, promoting optimal conditions for their natural processes to allow the development of biotic communities.

#### RECOVERY OF THE DEGRADED ECOSYSTEM.

The main objective is the expansion of valuable ecosystems by incorporating these areas. The degradation of ecosystems due to human action is reversed through intervention in the large concrete areas in Puerto Chico, La Xunquera, as well as the platform of La Llama beach and the recovery of the beaches originally located at the northern and southern ends of the San Juan de la Arena platform, in favor of the Nalón waters. The recovery of these areas involves the removal of hard infrastructure, the elimination of invasive species, channel filling, improvement of soil quality, restoration of water flows to favor sediment and nutrient input, and the replenishment of soil with wild species. Measures based on natural processes combined with specific actions in the most vulnerable areas.

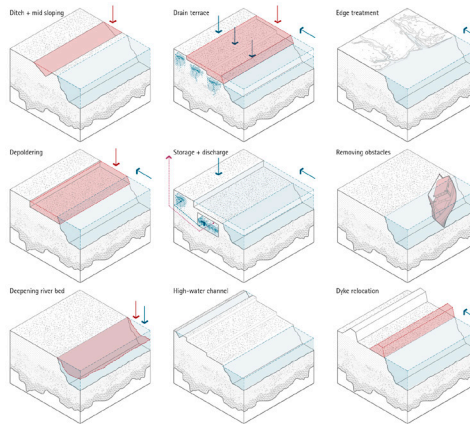
For example, the strategy to improve flow and hydraulic circulation takes the form of a marsh entrance or an overflow plain, depending on the context. Lastly, to feed the recovered marshes, not much sediment is required; small amounts of sediment from dredging will be strategically placed to better capture sediments through the study of channel velocities, flows, and transport. Along with this, disused infrastructure that interferes with river dynamics will be removed. Another measure involves deforesting the eucalyptus forest in three phases: progressive deforestation of the invasive exotic species, transformation of the wood into construction material for the new infrastructure through local economic incentives, which promotes a wood industry in the new "El Astillero" complex; and immediate reforestation using native species.



#### THE ROOM FOR THE RIVER.

Manipulating the terrain, especially its relief, is the response of any civilization to flooding. One variable of these landforms is what we call the "voids," meaning giving more space for floods. The Room for the River advocates for 9 topographic strategies along the estuary as flood mitigation measures in urban areas.

The proposal anticipates spaces for the expansion of the Nalón to relieve pressure on the cores. This improves the landscape quality of the intervened environments and reduces the vulnerability of riverine environments while increasing their adaptive capacity.

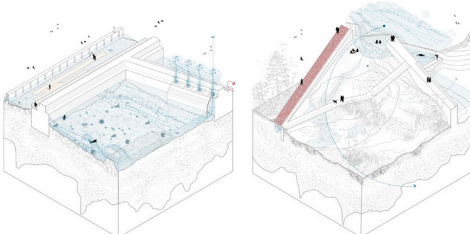


#### RE-NATURALIZATION OF THE DIKE.

Another type of terrain features are artificial reefs proposed for use as breakwaters in Puerto Chico and at the entrance of the canal. In other words, they dissipate the energy of the waves before they hit the dike. Instead of reinforcing the wall between people and the sea, the proposal embraces the sea, increases risk awareness, and reduces damage by designing a breakwater collar capable of cushioning the impact of wave energy, floods, and erosion. This is complemented by strategic infra-mareal breakwaters parallel to the most deteriorated coasts, which, together with the reef, form the perfect nature-based solution to reduce the agitation of the water surface that currently damages coastal installations and equipment. Additionally, the reef and the design of this breakwater incorporate a composition of rocks and specially carved pieces capable of housing fish, shellfish, and attracting birds in search of food. New ecologies that contribute to biodiversity improvement, restoring the nature of Puerto Chico while providing protection, leisure spaces, and fishing areas through new platforms at the estuary mouth. A new natural habitat for an infrastructure facing obsolescence.

#### BIOLOGICAL CONTINUITY PROCESSES IN THE ESTUARY BELT.

It is not only essential to preserve and recover green and blue systems, but the success of the action depends on connecting their essential elements in an overlapping network of ecosystems. Ecosystems are not conceived as independent and isolated systems linked by a scattered network of routes and focal points; instead, Humboldt's approach is put into practice, stating that they are all interconnected, and if one ecosystem starts to fail, it can have repercussions on other ecosystems. Therefore, biological continuity is pursued throughout the estuary. This objective is achieved through the permeability of existing infrastructure, the incorporation of new infrastructure with minimal contact with the ground, and the maintenance of respectful distances between human and non-human activities. In this way, the beaches of Garruncho and La Guardada connect to the Nalón through the new re-naturalization of Puerto Chico, where a saltwater pool is nourished by ecosystem dynamics and processes and the exchange of energy between both worlds. The swamp alder, thanks to the reorganization of Xunquera, thrives on the contributions of the marsh and stitches up the wound caused by human action. Meanwhile, La Llama beach expands its frontage to the north and south, relocating sports facilities, controlling and narrowing access for strollers and fishermen, providing sustainable infrastructure for traditional fishing without interfering with ground-level dynamics.



#### PHYSICAL AND SOCIAL RESILIENCE.

This living infrastructure is combined with programs and projects of social resilience in the adjacent local and regional neighborhoods, on a territorial platform comprising the Nalón estuary, to help increase risk awareness, empower citizens, and engage local schools in education about the sea. Specifically, the recovery of historically present economic activities related to the sea is proposed, as well as the construction of social centers (HUBs) like the Loop located in the Xunquera area, where people can learn and interact with the marine environment and the concept of resilience, and continue with educational projects with schools. Also, the promotion of the Business Nursery "El Astillero," where maritime entrepreneurial initiatives are compatible with environmental regeneration and scientific research in aquaculture related to marine soil recovery against eutrophication, pollution, and sedimentation degradation.

### B\_Climate Time: Resist, Delay, Storage, Discharge /Adaptation strategies to the climate crisis.

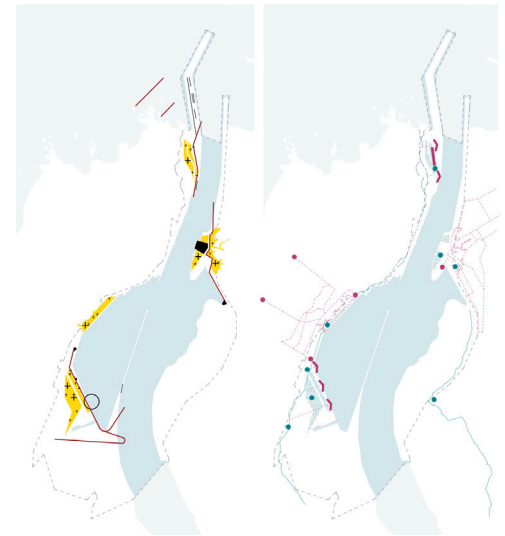
The estuary is exposed to significant risks of river and tidal flooding. A fully comprehensive solution goes beyond our means, time, and resources; therefore, the proposal prioritizes, builds intelligently, and recognizes where efforts are best focused. By implementing strategies integrated into natural and urban environments, investments in risk reduction should also empower communities, promote the blue economy, and allow us to grow in a resilient dynamic.

#### WATER CYCLE.

A new local water management system must be established. Waste substances, environmental toxins, nitrogen, and microplastics are discharged into the estuary through excess surface water, leaks from industries, and local agriculture. A new local water management system could protect the river, provide reliable access to clean drinking water, and utilize excess runoff and floodwater, gray and blackwater as valuable resources. The management of water in the Nalón estuary should be handled locally. The closed-loop system conserves resources and protects nature, the river, and the sea from harmful substances and pollution. Similarly, land use recovery returns natural runoff to the estuary, correcting sedimentation in the process.

#### RESIST, DELAY, STORAGE (RE-USE), AND DISCHARGE.

One of the most important measures to protect the Nalón estuary is managing rainfall, excess water, and avoiding the progressive rise of sea levels. To achieve this, a set of combined strategies and actions of both hard and soft infrastructures are presented to prevent flooding, slow down and channel water, store excess water through an interconnected green infrastructure, and then discharge it through alternative drains and even pumps. The comprehensive strategy based on excellent water cycle management coexists in scheduled hard infrastructures and soft landscapes for coastal defense (resist); neighborhood policy recommendations for water management and consumption, soft topographies, and urban infrastructures to slow down and redirect rainwater runoff (delay); an interconnected green infrastructure circuit to store and channel excess rainwater (storage); and water pumps and alternative routes to support drainage (discharge). The objectives of this multiple strategy are to manage water, both for disasters and long-term growth.



**Resist.** Hard infrastructures are implemented based on edge treatment through a new "seawall" executed using recycled wood from eucalyptus reforestation as an invasive exotic species. This infrastructure is combined with soft topographical landscapes, either behind this line, through crest recovery and gentle slopes, or in front, thanks to edge treatment, marsh recovery, riverbed improvements, terracing, or integrated double intra-mareal walls. At a natural scale, the artificial reef, infra-mareal breakwaters, and "The Room for the River" strategies ensure protection against agitation, force, and rising water levels.

**Delay.** Land use recovery and the reorganization of existing activities facilitate the use of geological characteristics of the soil, natural slopes, and modification of soft topography to delay and retain water. Recovery of natural runoff promotes a channeling network that restores proper sedimentation in the estuary. In addition to physical measures, a neighborhood territorial initiative is carried out to raise awareness of natural water management strategies. Therefore, "BLUE WATER IS THE NEW BLACK", referring to the black coloration of the river due to coal, is a guiding device that allows locating empty areas, parks, and reserves, and impermeable pavements to encourage actions such as geological recovery, planting, installation of tanks and deposits, rain gardens, and porous soils.

**Storage (re-use).** By utilizing publicly-owned places such as outdoor sports facilities, green corridors for slow traffic, and parking areas, an atomized network of cisterns, septic tanks, and cisterns underneath is created. This is to store excess



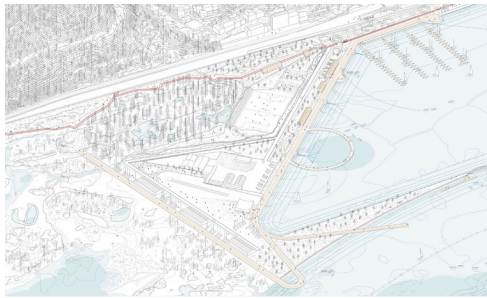
water and proceed with its reuse through various treatments according to its consumption. This measure not only involves hard infrastructure but also includes bioretention basins, natural ponds, irrigation channels, and the new green network that channels water, complementing the ultimate natural ecosystem for water storage: the preserved and recovered marshes.

**Discharge.** Finally, excess water, after the collapse of the cisterns, seeks alternative routes and water pumps for discharge that do not interfere with the tidal dynamics of protected ecosystems or human and non-human activities.

### C\_Biological Time: Coexistence infrastructures based on permanence and belonging to the place.

By focusing on the everyday life, the aim is to narrate themes marginalized by history. The meeting point for the youth was always the harbor. Girls used to sit at the harbor to watch trains and boats pass by, curious about what novelties they could bring to the town. The harbor was full of life, with nets, steam, ships, and dreams. The proposal borrows the evocative image of the harbor as a place of opportunities to tell a new "eco-centric" economic and productive landscape that takes place not only within the boundary between nature and sea but also blurs and exceeds these limits to opt for a new hybrid productive natural landscape.

The reordering of the old shipyard of La Xunquera and its physical connection with the marshes develop under the parameters of permeability, integration, co-evolution, and coexistence of a network of deeper processes and activities. Organized by the geometric figure of a right-angled triangle, whose epicenter coincides with the new heritage catalogue of the shipyard ramp as an industrial heritage, the hypotenuse of this triangle is equidistant in four bands whose hinge is located at the new access to the train station from the harbor, and the re-naturalized parking area, where only necessary traffic for economic activities is allowed. A fifth productive band organizes industrial and artisanal activities, leaving the heart of the geometry for public initiatives such as existing warehouses, the heritage catalogue shipyard ramp, and the creation of the "El Astillero" new Social Center and Business Nursery, which includes an outdoor event space at the beginning of the ramp to give visibility to local and territorial initiatives.



### BLUE LANDSCAPE.

La Xunquera has a strategic location for water-related industries due to its position facing the water and its short distance to low-density inland areas embraced by the beauty of the marsh. Band zero, located at the wide waterline, not only expands the offer of docks in number and quality but also provides a new passengers boarding area on La Carmela and a proposal for a new initiative that complements these round trips with a vessel evoking the lost image of "El Vaporin." Ramps and water access points for users and the blue economy, event spaces along the land-water boundary, arms reaching out to the estuary, and a loop dedicated to conservation, research, and ecosystem culture are other available facilities.

The main band develops facilities for the blue economy and its immediate access to water resources and a portion of nature for coexistence. Housed in pavilions made of recycled wood from the deforestation of eucalyptus as an invasive species, they are closed with wooden shutters, polycarbonate, or even fishing nets, to achieve gradients of security and privacy for different uses while achieving circular versatility in space allocation. The rear areas, coinciding with large green reserves, allow for the drying of kayaks, holding classes, and providing a relaxing rest area. All this is achieved by promoting a new Business Nursery based not only on community consultation but also on the desestacionalized needs of activities. In the new "El Astillero" Social Center, the local supply and demand are analyzed, and emerging activities such as diving, paddle surfing, kayaking, recreational boating, traditional fishing, local cuisine, and cultural activities linked to aquaculture are encouraged, creating a rotating allocation of spaces that dynamize, promote, and prevent stagnation of emerging businesses. An extensive local offering makes it an attractive area.

### GREEN LANDSCAPE.

The second band is developed between the habitat of the alder marsh and the lands of the former rail tracks. Here, transitional spaces, recreational areas open to the public, the relocation of sports facilities, and low-maintenance nature are emphasized. A third landscape emerges with belvederes, children's playgrounds,

a green network of paths, ponds, irrigation channels, laughter, and the first kisses of two "guajes" who share memories.

The third band features a new pilgrims' hostel for the Northern Way. Integrated within the alder marsh, it aims to divert pilgrims in favor of a cultural and restful space, yet with the facilities and resources to have an urban center and a seafront at their disposal to take off their shoes, soak their feet in saltwater, and rest.

### PRODUCTIVE LANDSCAPE.

Industry and nature have been considered incompatible with urban development. Filled with "identity artifacts" from its rich productive past dominating the promenade, the estuary tests an emerging productive landscape after the reordering of the shipyard, where sustainable production, value creation, and innovation can coexist with urban development within nature. A sustainable development where the old and new industrial landscapes intertwine with the production of ecosystem services and business initiatives that revitalize the sector towards desestacionalized maritime activities.

The relocation of industry and major workplaces away from a strategic location on the waterfront such as La Xunquera risks losing potential heterogeneous urban qualities, professional networks, and knowledge exchange, leaving empty spaces between active industries that create generic non-places. Therefore, the reordering groups and positions pieces and equipment related to sustainable industry in a more friendly environment.

The fifth band, acting as the side of the triangle, comprises the pre-existing Náutica Vázquez with large spaces reserved for wood and sea-related production. There, eucalyptus wood will be transformed into various solutions as mentioned. Far from closing off the ensemble, it allows visual and biological permeability between pieces, either due to the detachment of the buildings from the ground or by making use of the voids as "campas" or re-naturalized recreational facilities. The relocation of the sports field has made it possible to allocate space for the marsh, concentrating and densifying the reordering for the optimal use of the land in favor of high-value ecosystems.

Finally, the Muros de Nalón recycling center is relocated to a peripheral location to the marsh. The former level crossing of the railway, now only used for maintenance and emergencies, provides direct access to a gray infrastructure camouflaged among the large trees and the recovery of topographic crests that delimit the railway tracks.



### PEDAGOGICAL LANDSCAPE.

The estuary is visualized as a potential research satellite connected to university scientific networks. La Xunquera proposes a framework for innovation, marine research, and aquaculture, intertwined with urban life. Between the so-called band zero and the last one, a pedagogical landscape is established, featuring several elements: the innovative loop serving as a space for research and anticipation of maritime knowledge, the nature route pavilion acting as an interpretation center for the marshes and base for the bird observatory, and the gathering of knowledge at the "El Astillero" Social Center and Business Nursery. The first element serves as a space for interpreting fishing heritage, traditional fishing arts, local cuisine, and marine wildlife observation. It is a meeting place to learn and connect with the marine environment and the concept of resilience, continuing educational projects with schools, environmental regeneration, and scientific research on aquaculture relative to the recovery of marine soils against eutrophication, pollution, and degradation by sedimentation.

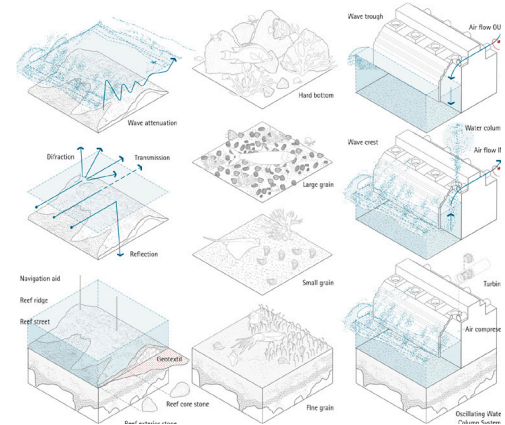
The second element encourages business initiatives for guides and interpreters of ornithology, by replacing bird observatories within the marshes with recreational areas away from them, such as the eucalyptus pavilion. The observatory is not a fixed location but is

created along the path, in a natural belt that allows for soil and marsh dynamics and water management. Through bird monitoring, we can learn about and understand our ecosystem through audio guides activated using QR codes integrated into the construction of the route or automatically triggered at specific kilometer points if you have the "LET THE BIRDS SING" app. Discreet elements integrated into the conception of a pavement made of recycled steel rounds from selective demolitions that have minimal impact on the marshes, allowing for their natural dynamics while enjoying their ecological services. Itineraries, recreational areas open to the public in the second band, and parks with green areas and children's games based on knowledge of flora species are part of this cultural, educational, respectful, and awareness-raising innovation concerning the non-human beings cohabiting in the estuary. Lastly, the third element is the result that houses the dissemination of data and knowledge at the regional level to facilitate the stays of different national and Asturias scientific networks while showcasing local business initiatives.

### SUSTAINABLE LANDSCAPE.

The main objective is to reduce energy consumption and non-utilizable waste in the construction of the proposal. The rational organization of consumed energies and resources focuses on the use of construction materials obtained from deforestation of invasive species such as eucalyptus, as well as materials from forest fires, reused fishing materials, or materials from selective demolition of environments and buildings. With these materials, it is possible to create a network of routes and facilities that combine recycled steel with an oxidation time that contrasts with the color of the native vegetation in the area, the maritime front of eucalyptus that resists sea level rise and continues to store CO2 at the end of its useful life, pavilions integrated with nature under which the natural runoff of the land flows, and enclosures made of nets, wood, or polycarbonate that make us aware of the second life of matter.

Resource optimization is complemented by the achievement of renewable energy through the use of wave energy equipment in the new solid concrete dike. Since it is not viable to renaturalize the dike due to the high amount of waste generated in its demolition, it integrates an installation that converts the oscillation of the water column caused by the waves into electrical energy. The recent successful case in Mutriku makes us dream of clean energy that evokes the power of the sea with the sound of blowholes.



### D\_Psychological time: everyday and ordinary phenomena.

We see ourselves capable of giving a special meaning to all the everyday and ordinary phenomena that shape contemporary society. The socio-ecological interpretation based solely on aesthetic parameters is a thing of the past. The regulation and incorporation of ecosystem services into urban centers promote the physical and psychological health of the population, emphasizing a quality landscape and environmental relationship with their surroundings. Therefore, feasible short-term actions in human time provoke a comparison with past states that leads to a conscious feeling of coevolution with nature towards a green management system. For this reason, these actions are developed in the urban environment, extending their boundaries through an ecosystem ring. Dissecting the unique composition of the estuary layers, the framework of paths and routes aims to create a divergent infrastructure to promote conversation between the two towns and their territory. It creates links between the past and the present and allows new ecological realities to emerge by establishing connections between human beings and nature. This network provides a coherent landscape that permeates the estuary.

### GREEN MOBILITY.

The proposal prioritizes mobility that promotes health, is low in emissions, uses renewable and efficient energy in the available space. The existing car infrastructure is modified at the ends of the estuary, Puerto Chico and La Xunquera, and in the area of the San Juan de la Arena harbour, in favor of new investments in green mobility through a circular line of electric minibus fleet, a natural cycling belt, with public local e-rent hubs, and pedestrian areas combined with the atomization of parking lots and mobility hubs in strategic locations. In this way, parking spaces are provided at points where only access by vehicle to economic, maintenance, and

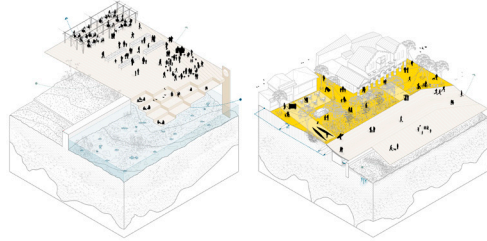


emergency services is guaranteed. The enjoyment of environmental regeneration is only feasible with strategic provision of its services. By reducing motorized surfaces, we will achieve a new welcoming and re-naturalized center. Electric bike and minibus ferries connect San Esteban with San Juan de la Arena, as well as with the adjacent towns of Muros de Nalón and Soto del Barco. A green connection not only as a sustainable functional network but also as a recreational path for humans and other living creatures that achieves a connective fabric between the coast, residential areas, the new economic port, local centers, and nature.

**COEXISTENCE OR "SUPER FLOATING ISLANDS" IN THE ESTUARY.**

Both in San Juan de la Arena and San Esteban, pedestrian modalities are prioritized in friendly environments over vehicular traffic in population centers that constitute 15-minute cities. For this, both areas of coexistence are created as "super islands." It represents the tactical reconquest of asphalt through undifferentiated permeable surfaces between mobility and stays, human and non-human, combining urban vegetation that provides climatic improvements with commerce, ground-floor activities, and local life. Providing the greatest possible mix of activities and usage time. A redistribution of traffic, as well as the creation of a mobility HUBs that integrates parking in the area, allows clearing the main road, which is only traveled through a winding path through natural obstacles and facilities, at low speed by vehicles. Alongside this, long and wide "carpets" are placed on the ground floors of buildings to foster social relationships and exchanges of synergy with the environment. In this way, terraces have new areas under the shade of native trees, buildings have universally accessible areas at their entrances, and the fishermen's guild "La Rula" has a marked axis with the new event plaza descending towards the waters of the Nalón. These pavements are the basis of permeability and greening of urban areas, without differences in levels, without elevations with plant beds, eliminating any road markings, and introducing a high reflectance index to minimize the effects of the heat island.

In summary, green streets that reconcile mobility with other uses of public space, such as staying, playing, meeting, or contemplating. In them, the priority is for people who walk, both to move and for other social activities.



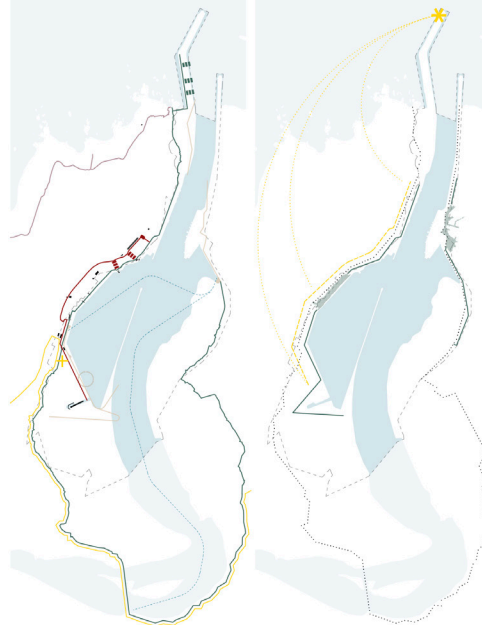
**A GREAT NETWORK TO ENHANCE.**

The green functional mobility is added to the existing and enhanced overlapping layers of paths and trails. A circular heritage route that extends from the newly cataloged "Astillero" ramp to the industrial hoppers, passing through various important points of industrial memory. To complete this route, the difference in elevation between the hoppers and the urban area of San Esteban is connected through a vertical wooden structure that serves as an elevator and new viewpoint, making universal accessibility possible in the heritage.

The natural discovery network runs in parallel with the sports and cycling network, creating a ring that crosses the Nalón, surrounds the marshes on its periphery, avoiding intrusions, serving as a pedagogical landscape and bird and nature observatory. In the northern extreme, it connects with the existing viewpoint route in Puerto Chico, where one of the pavilions is dedicated to renting sports equipment, as well as lockers for accessing the beaches as lightly as possible.

The new waterfront edge, that line of wood resisting the rising sea level, becomes a new attraction over the estuary at the strategic points mentioned before. It combines mobility functions with recreational activities and small gestures over the Nalón that allow interaction, such as viewpoints or water access points.

Lastly, a mandatory detour of the Camino del Norte passing through the new hostel becomes indispensable, balancing the overnight stays of pilgrims with Muros de Nalón in a renaturalized environment deeply connected with our inner selves.



**PUBLIC FACILITIES.**

This juxtaposed network functions thanks to attractive focal points, among which stand out the mentioned Acuaculture Loop, the new Social Center or Business Nursery "El Astillero," the elevator viewpoint of the grain silos, the event square in San Juan de la Arena, a flexible space tailored to the dimensions and needs of the estuary, allowing its naturalization and biological continuity below while descending to the Nalón; and the renaturalization of saltwater pools. A facility that is currently a great attraction and is integrated with the new self-organized aesthetics of Puerto Chico by intruding saltwater from the beaches of Garruncho and La Guardada, and whose facilities follow the same sustainable logic as the rest of the proposal. A new space that does not overpower the natural environment but understands and benefits from its dynamics.



**ZERO-MAINTENANCE.**

Green spaces and their inherent ecology are not simply "added" to urban planning as a mere gesture. All the actions of psychological time coexist with the impulse of renaturalization. Like Gilles Clément, we propose a management by abandonment. Not an unconscious abandonment, but a fully conscious one of constructing a planetary garden, biodiverse, flexible, dynamic, and self-organized. A third landscape that reduces maintenance costs to zero by favoring native species that have been there long before human activity. The urban biomass increases with the greening of its streets through low-maintenance native species, combined with existing trees and shrubs, avoiding the use of harmful phytosanitary treatments. Their composition and location in urban areas are studied based on growth variables, seasonal changes, volume, flowering, and color. A new approach under the resilient aesthetics that we are seeking.

**LANDSCAPE ETHEREAL: Complex Adaptive System.**

It can be said that complex adaptive systems are often subject to a set of recurring dynamics along four phases: a growth or explosion phase, a conservation or consolidation phase, a release, catharsis, or collapse phase, and a phase of reorganization or renewal. These four phases are known as the adaptive cycle and represent the dynamic behavior of socio-ecological systems. The evolution of the climate and the effects of global warming, the new forms of water capture, plant species and their ecosystems, the ways in which human beings have adapted to extreme conditions, and the traces they have left on the territory are lessons from a system far from equilibrium with the anticipated conditions of an imminent climatic future. The current critical situation seeks to value open systems while deconstructing the aesthetic imaginary of an exploitable and abandoned territory "because there is no life there."

The landscape is only reconfigured in a critical state, on the brink of chaos. Conceiving the world based on the principles of thermodynamics and the theory of self-organized critical states would lead to a demystification of the classical picturesqueness away from "out there" allowing action on matter and life. As both Reyner Banham and John Van Dyke have stated of an open system on the brink of chaos and continually self-organizing, it is a space for illusion and fantasy. Now, for the Nalón estuary, it is essential to once again project a new fantasy, a socio-ecological utopia in co-evolution with all the species that continues to endorse it as a resilient territory in processes that are far from balanced and that allows us to imagine these structures of juxtaposed strata as the scaffolding of an ethereal landscape.

Asturias had two colors.  
Tenía Asturias dos colores.

